CLIMATE ANALYSIS CENTER

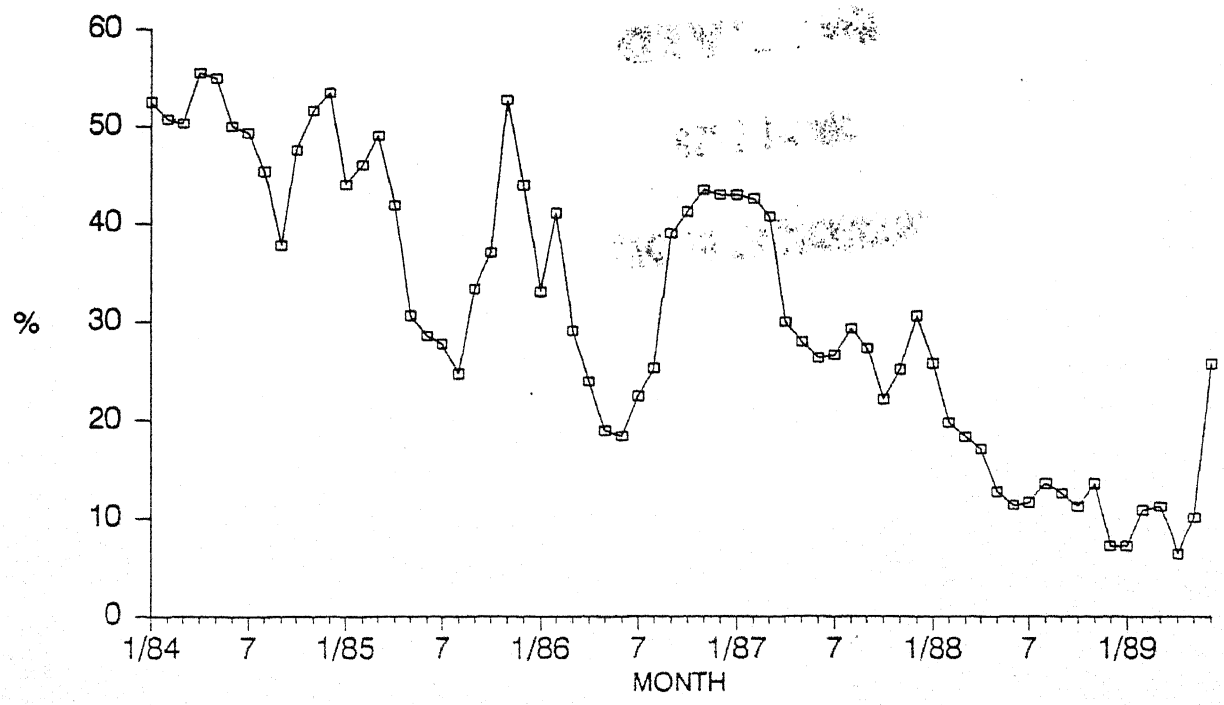
CONTAINS:
JUNE 1989 UNITED STATES CLIMATE SUMMARY

WEEKLY CLIMATE BULLETIN

No. 89/27 **Washington, DC** **July 8, 1989**

U.S. % AREA UNUSUALLY MOIST

JANUARY 1984 THROUGH JUNE 1989



National Climatic Data Center, NOAA

RECORD AND NEAR-RECORD MAY AND JUNE RAINFALL IN THE SOUTH AND EAST HAS REVERSED A DOWNWARD TREND IN THE U.S. PERCENT OF AREA UNUSUALLY OR EXTREMELY MOIST, BASED UPON THE PALMER DROUGHT INDEX CATEGORIES. EVEN THOUGH NEARLY 25% OF THE NATION IS EXPERIENCING ABNORMAL WETNESS, APPROXIMATELY ONE-THIRD OF THE COUNTRY HAS SEVERE OR EXTREME LONG-TERM DRYNESS, ESPECIALLY THROUGHOUT THE WEST. FOR FURTHER DETAILS, REFER TO THE U.S. JUNE CLIMATE SUMMARY STARTING ON PAGE 9.

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- Highlights of major climatic events and anomalies.
- U.S. climatic conditions for the previous week.
- U.S. apparent temperatures (summer) or wind chill (winter).
- Global two-week temperature anomalies.
- Global four-week precipitation anomalies.
- Global monthly temperature and precipitation anomalies.
- Global three-month precipitation anomalies (once a month).
- Global twelve-month precipitation anomalies (every 3 months).
- Global three month temperature anomalies for winter and summer seasons.
- Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

STAFF

Editor:	David Miskus
Associate Editor:	Paul Sabol
Contributors:	Jeffrey D. Logan
	Keith W. Johnson
	Vernon L. Patterson
	Richard J. Tinker
Graphics:	Robert H. Churchill
	Michael C. Falciani

*To receive copies of the **Bulletin** or to change mailing address, write to:*

Climate Analysis Center, **W/NMC53**
Attn: WEEKLY CLIMATE BULLETIN
NOAA, National Weather Service
Washington, DC 20233

For CHANGE OF ADDRESS please include your old mailing label.

Phone: (301) 763-8071

WEEKLY CLIMATE BULLETIN REQUEST

☐ Please **ADD** my address to your mailing list.

☐ Please **CHANGE** my address on your mailing list.

☐ Please **DROP** my address from your mailing list.

Name _____

Organization _____

Address _____

City _____ State _____ Zip _____

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF JULY 8, 1989

1. Central and Western United States:

HEAT WAVE OCCURS.

High temperatures, as much as 6°C above normal, spread across much of the region. The warm, dry weather aggravated current and potential forest fire conditions across much of the West (see U.S. Weekly Climate Highlights) [2 weeks].

2. North Central United States:

STILL DRY.

Little or no precipitation fell in most of the area as long-term dryness persisted (see U.S. Weekly Climate Highlights) [16 weeks].

3. Northeastern United States:

MORE RAINS.

Scattered heavy rains, approaching 180 mm, fell at some stations; however, other stations measured less than 15 mm of precipitation (see U.S. Weekly Climate Highlights) [9 weeks].

4. Gulf Coast:

HEAVY SHOWERS AGAIN.

Over 175 mm of precipitation was reported along the Gulf Coast as wet weather persisted (see U.S. Weekly Climate Highlights) [8 weeks].

5. Ecuador:

HEAVY RAINS CONTINUE.

More relatively heavy rains with flooding were reported by the press [3 weeks].

6. British Isles:

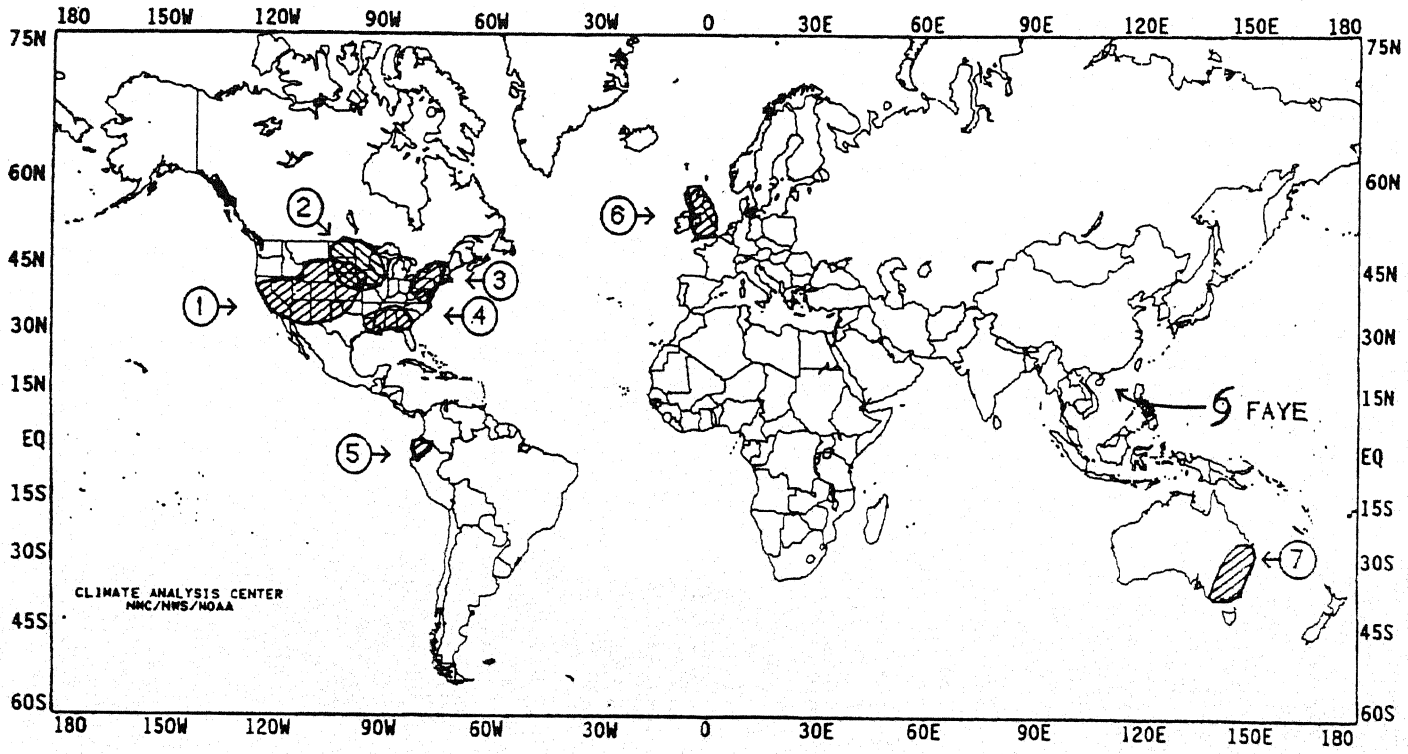
DRYNESS ENDS.

Up to 42 mm of precipitation was measured at stations in England; however, Scotland received little or no rain [Ended at 4 weeks].

7. Southeastern Australia:

WETNESS DIMINISHES.

Precipitation amounts were generally less than 57 mm across the southeastern part of Australia [Ending at 16 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF JULY 2 THROUGH JULY 8, 1989.

The wet and cool weather pattern continued across the South and East during most of last week while scorching heat baked the desert Southwest, Rockies, northern Plains, and upper Midwest. Early in the week, the remnants of Tropical Storm Allison spread numerous showers and thunderstorms from the lower Ohio Valley southward to the central Gulf Coast. Some flooding was reported in portions of Mississippi, Alabama, Tennessee, and Kentucky as heavy rains fell on saturated grounds. The metropolitan areas of Biloxi, MS, Bowling Green, KY, and Columbus, GA were drenched with more than 5 inches of rain within a 24-hour period. Farther west, a stationary front triggered severe thunderstorms in parts of the northern and central Great Plains and upper Midwest. A strong ridge of high pressure anchored over the southern Rockies brought dry and hot weather to much of the West. By mid-week, a broad trough of low pressure covered the East and Southeast as heavy showers and thunderstorms soaked portions of mid-Atlantic, southern Appalachians, and central Gulf Coast. In the Philadelphia, PA and Wilmington, DE areas, between 5 and 10 inches of rain in 24 hours caused severe flooding, while similar downpours flooded parts of northern Georgia. With the ridge intact, much of the West continued to sizzle with highs in the nineties and one hundreds. Strong thunderstorms once again developed ahead of a cold front in the upper Midwest. Towards the end of the week, hot, dry weather persisted in the West as Denver, CO hit 100°F for the fifth consecutive day (July 4-8). The cold front progressed eastward to the New England coast by Saturday, generating severe weather in sections of New England. Generally dry and mild conditions were observed across Alaska and Hawaii with the exception of heavy showers at Hilo, HI.

Based upon the River Forecast Centers, the greatest weekly amounts were located in the eastern Tennessee Valley and the southern Appalachians (see Figure 1). Up to 13.6 inches of rain fell in extreme western North Carolina, while many stations in northern Georgia and Alabama, the western Carolinas, and southwestern Virginia measured between 4 and 8 inches (see Table 1). Locally heavy totals (more than 4 inches) occurred along the central Gulf Coast and in Delaware, New Jersey, and eastern Pennsylvania. Most of the Southeast and Atlantic Seaboard received moderate to heavy precipitation last week, continuing a stretch of wet weather that began in early May. Light to moderate amounts fell along the Pacific Northwest Coast, in portions of the Great Plains, and across much of the eastern third of the nation. Little or no precipitation was recorded throughout the western half of the country, in the middle Mississippi Valley, and the central Great Lakes.

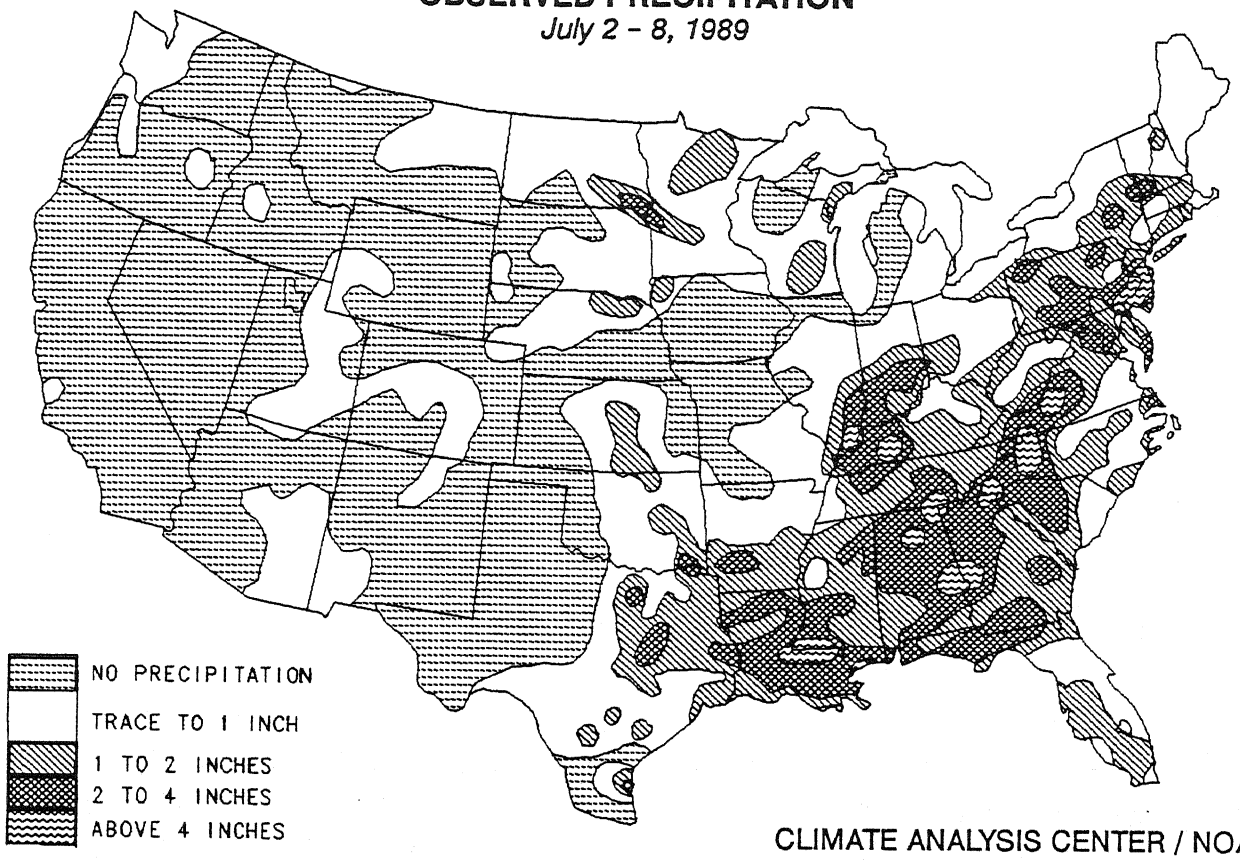
Extreme heat broiled the Southwest, Rockies, the northern half of the Plains, and the upper Midwest as weekly temperatures averaged up to 12°F above normal. The greatest positive departures (between +9°F and +12°F) occurred in the central Rockies and northern Plains (se Table 2). Dozens of stations tied or set new daily maximum temperature records during the week, while many locations also established new July and/or all-time record highs. Elsewhere, above normal temperatures were recorded in the southern Great Plains, the Midwest, New England, Florida, and across Alaska. Cooler conditions were experienced in the Pacific Northwest, the south-central Great Plains, the Southeast, and the southern Appalachians as weekly temperatures generally averaged between 1°F and 4°F below normal (see Table 3).

TABLE 1. Selected stations with 3.00 or more inches of precipitation for the week.

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
COLUMBUS, GA	7.94	MILTON/WHITING NAS, FL	3.91
HILO/LYMAN, HAWAII, HI	7.72	PENSACOLA, FL	3.88
WILMINGTON, DE	7.12	CHARLOTTE, NC	3.56
BILOXI/KEESLER AFB, MS	6.09	ALEXANDRIA/ENGLAND AFB, LA	3.55
WRIGHTSTOWN/MCGUIRE AFB, NJ	5.99	BIRMINGHAM, AL	3.53
CHATTANOOGA, TN	5.69	ATLANTA, GA	3.44
BOWLING GREEN, KY	5.57	MONTGOMERY, AL	3.43
ROANOKE, VA	5.46	CROSSVILLE, TN	3.25
MCCOMB, MS	5.01	FORT MYERS, FL	3.18
PHILADELPHIA, PA	4.57	HOPKINSVILLE/CAMPBELL AAF, TN	3.12
HICKORY, NC	4.47	VALPARAISO/EGLIN AFB, FL	3.08
COLUMBUS/FT BENNING, GA	3.91	EVANSVILLE, IN	3.04

OBSERVED PRECIPITATION

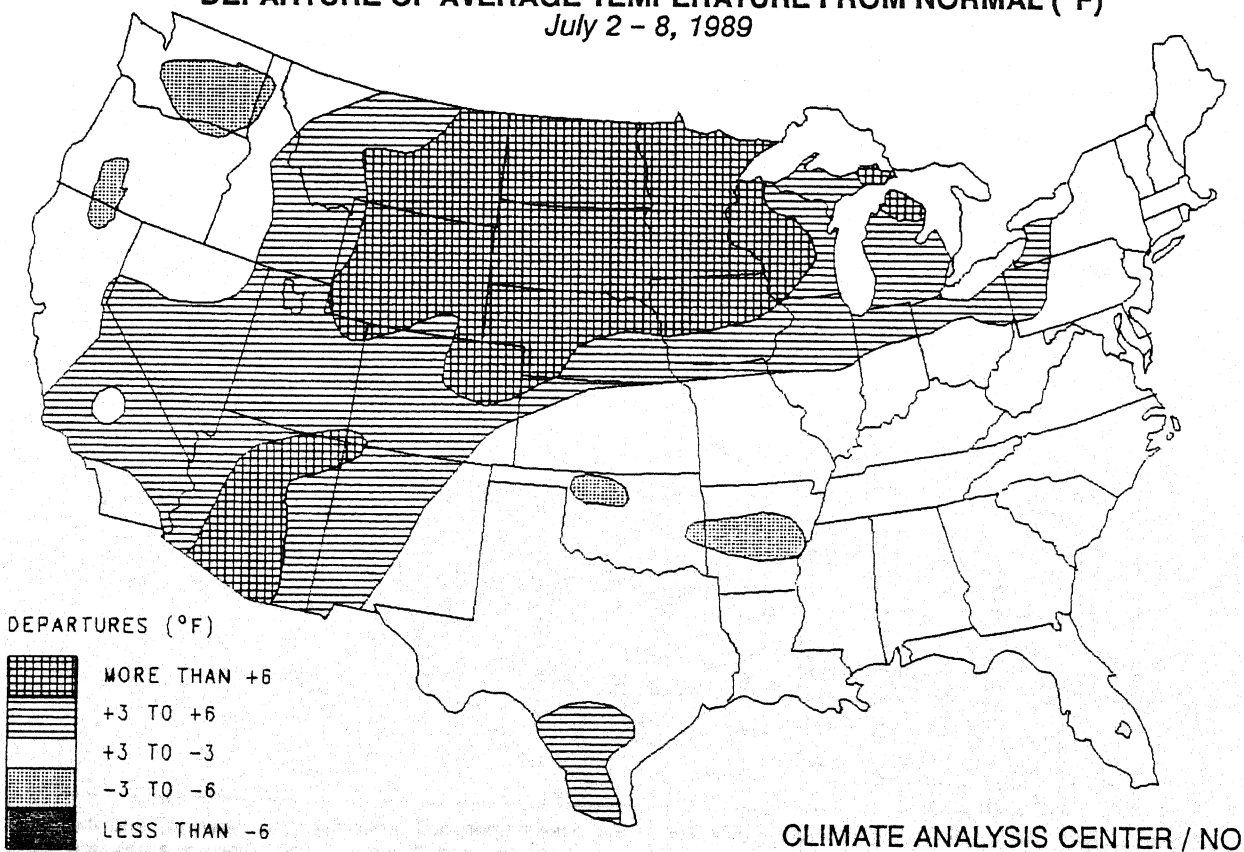
July 2 - 8, 1989



CLIMATE ANALYSIS CENTER / NOAA

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

July 2 - 8, 1989



CLIMATE ANALYSIS CENTER / NOAA

TABLE 2. Selected stations with temperatures averaging 8.0°F or more ABOVE normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
SCOTTSBLUFF, NE	+11.5	84.6	MINNEAPOLIS, MN	+8.8	81.0
SIDNEY, NE	+11.2	82.2	SPENCER, IA	+8.7	80.9
RAPID CITY, SD	+11.0	82.2	HURON, SD	+8.6	81.5
SIOUX FALLS, SD	+10.4	83.4	PHOENIX, AZ	+8.5	100.0
BISMARCK, ND	+10.4	79.6	FARGO, ND	+8.5	78.2
PIERRE, SD	+10.2	83.8	ABERDEEN, SD	+8.4	79.5
VICTORVILLE/GEORGE AFB, CA	+10.0	87.2	WORLAND, WY	+8.4	79.1
AKRON, CO	+9.9	82.4	CASPER, WY	+8.4	77.7
JAMESTOWN, ND	+9.6	78.5	WILLISTON, ND	+8.4	77.4
VALENTINE, NE	+9.5	82.9	CHEYENNE, WY	+8.3	75.6
LANDER, WY	+9.2	78.3	MCGRATH, AK	+8.3	66.6
DICKINSON, ND	+9.1	77.1	SHERIDAN, WY	+8.0	76.1
DENVER, CO	+9.0	81.3	BARROW, AK	+8.0	46.1
ALEXANDRIA, MN	+9.0	78.6			

TABLE 3. Selected stations with temperatures averaging 2.5°F or more BELOW normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
YAKIMA, WA	-5.8	63.5	KEY WEST, FL	-3.1	81.0
PENDLETON, OR	-4.5	67.8	MEDFORD, OR	-3.0	68.0
OLYMPIA, WA	-4.2	58.0	GAGE, OK	-3.0	77.7
WENATCHEE, WA	-4.1	68.4	SPOKANE, WA	-2.9	65.1
BURNS, OR	-3.9	63.8	WALLA WALLA, WA	-2.8	70.8
LITTLE ROCK, AR	-3.5	78.0	GARDEN CITY, KS	-2.8	76.4
MCALESTER, OK	-3.2	78.6	REDDING, CA	-2.5	79.9

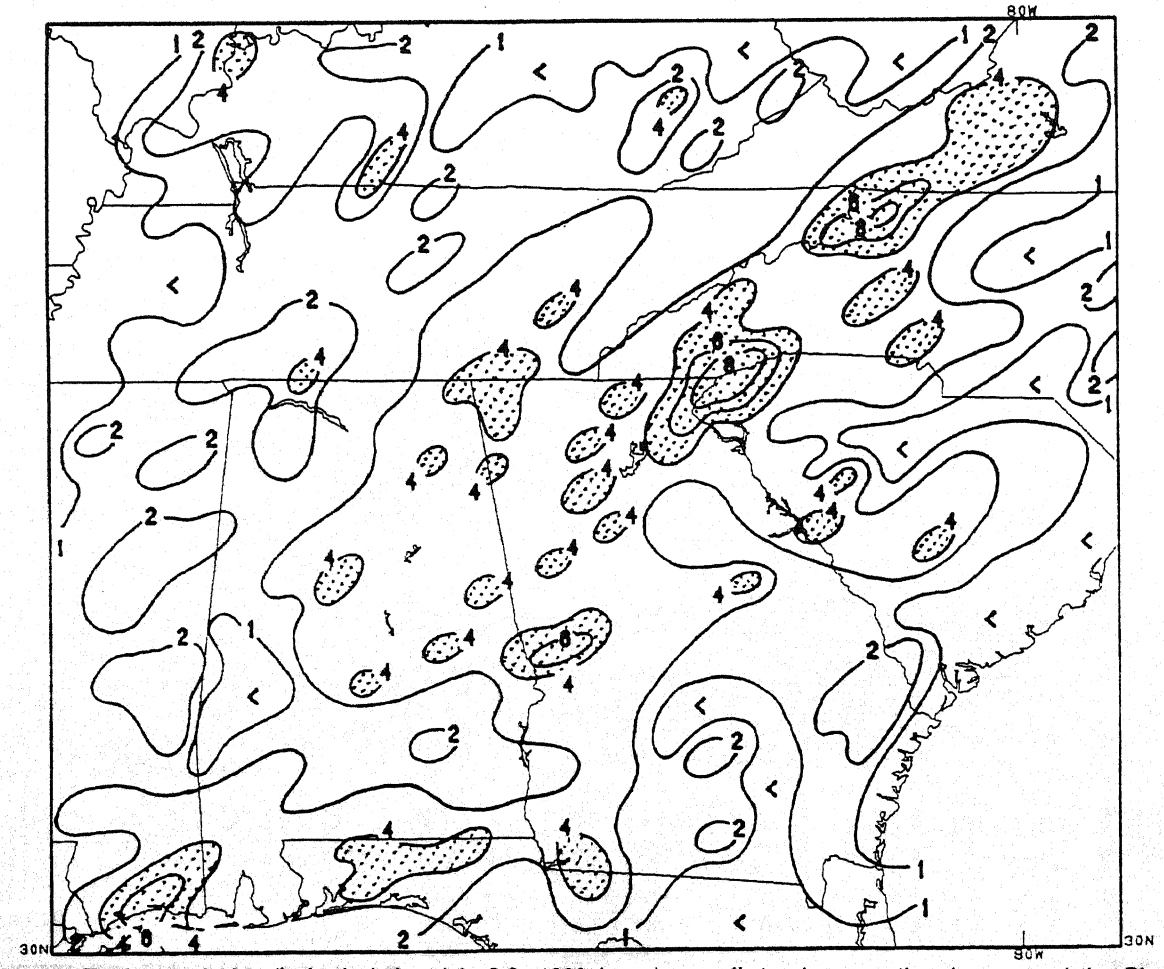
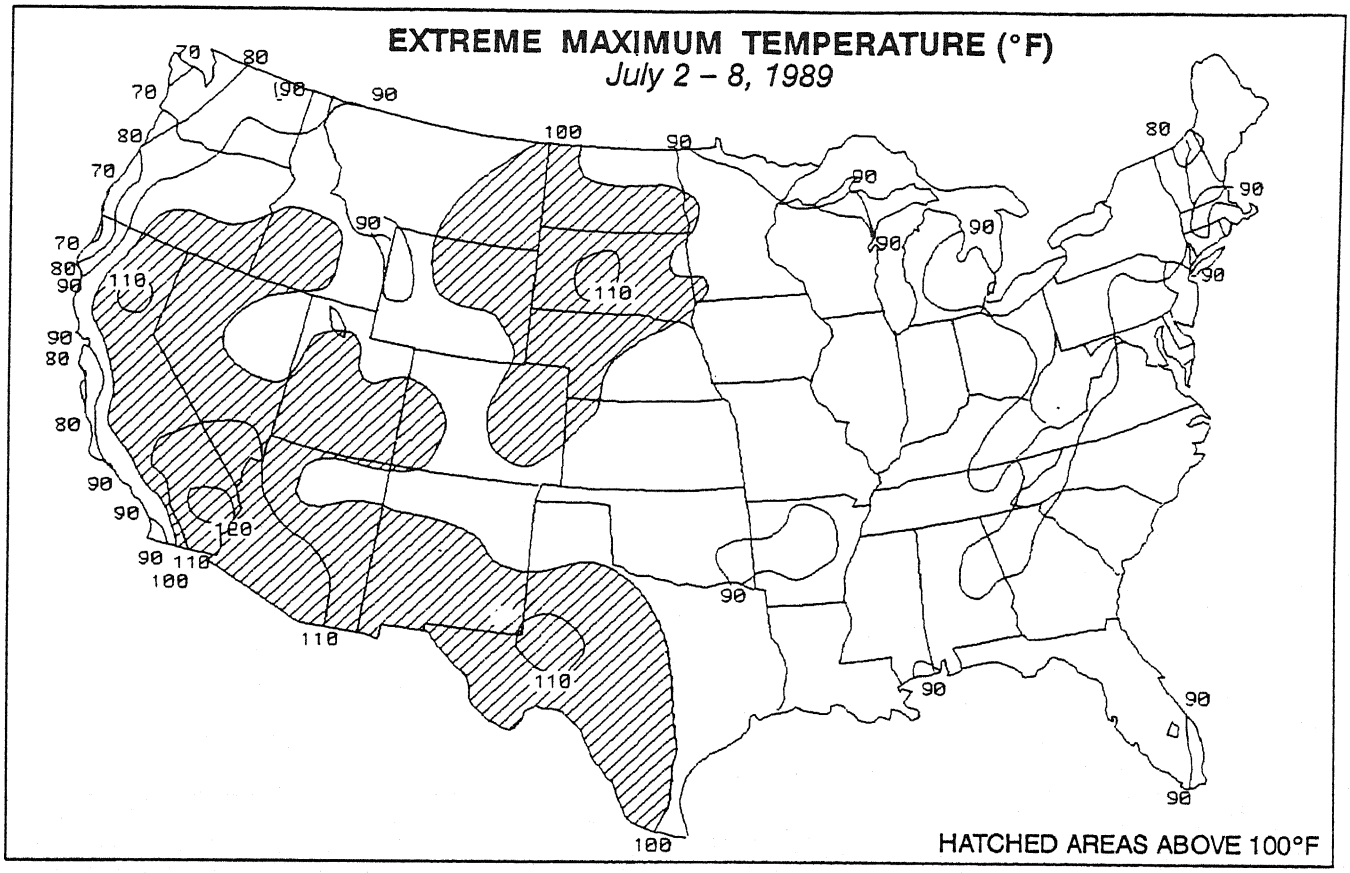
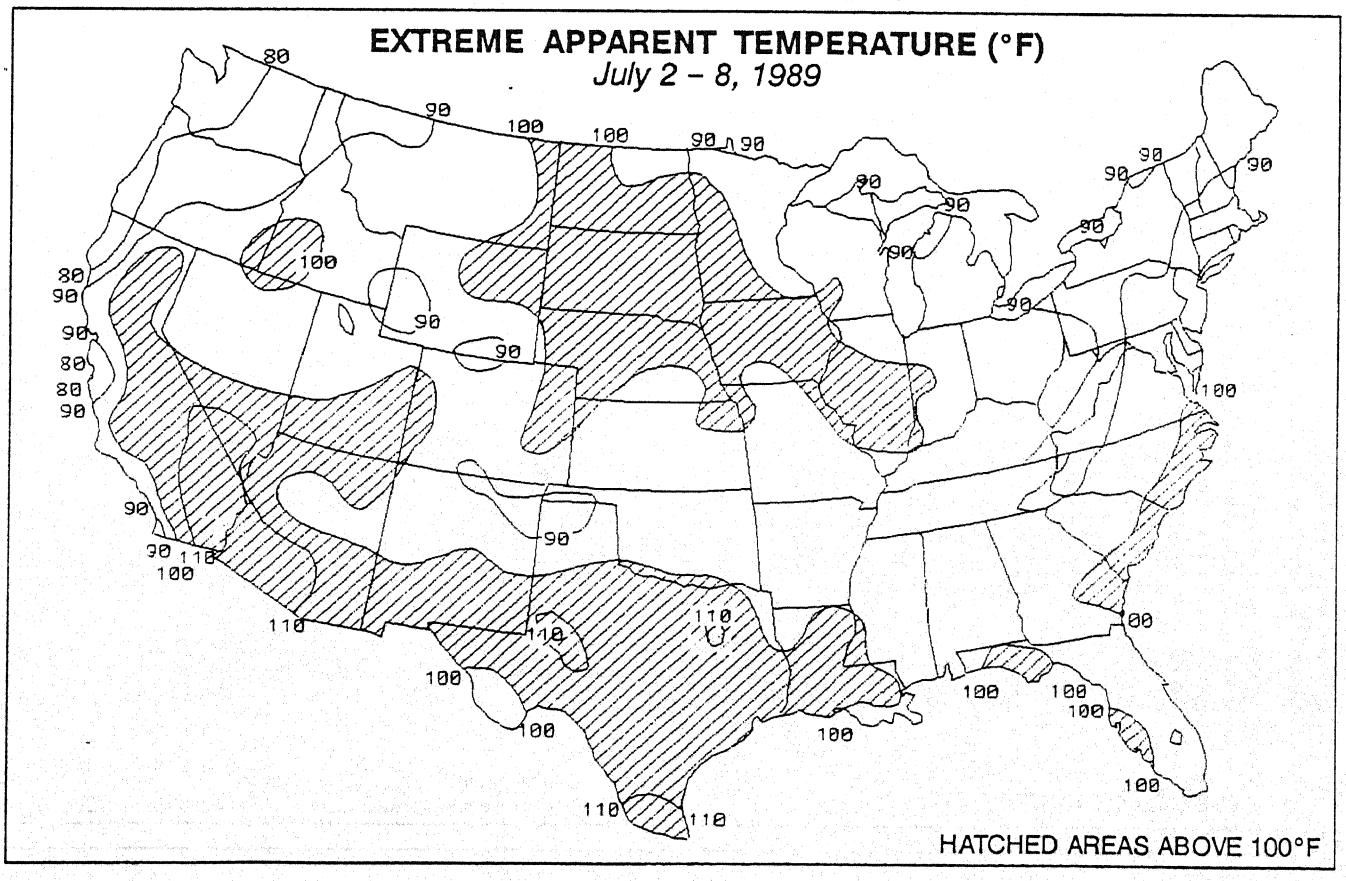
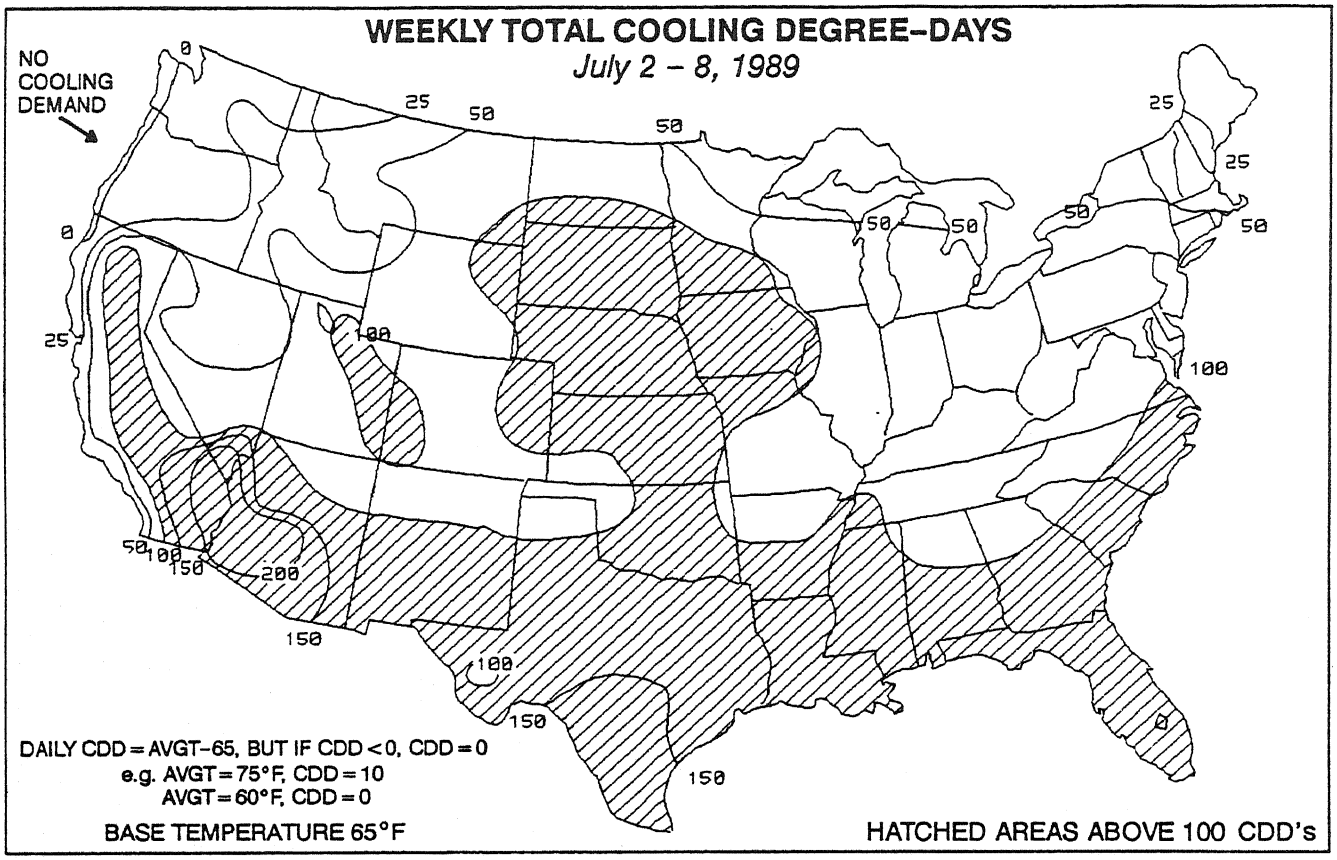


Figure 1. Total precipitation (inches) during July 2-8, 1989 based upon first-order synoptic, airways, and the River Forecast Centers stations. Isohyets are only drawn for 1, 2, 4, 6, and 8 inches, and stippled areas are more than 4 inches. Heavy showers and thunderstorms continued to soak much of the Southeast and Gulf Coast as moisture from the remnants of Tropical Storm Allison dumped up to 13.6 inches of rain on extreme western North Carolina. Torrential downpours on already-saturated grounds caused severe flooding in many locations.

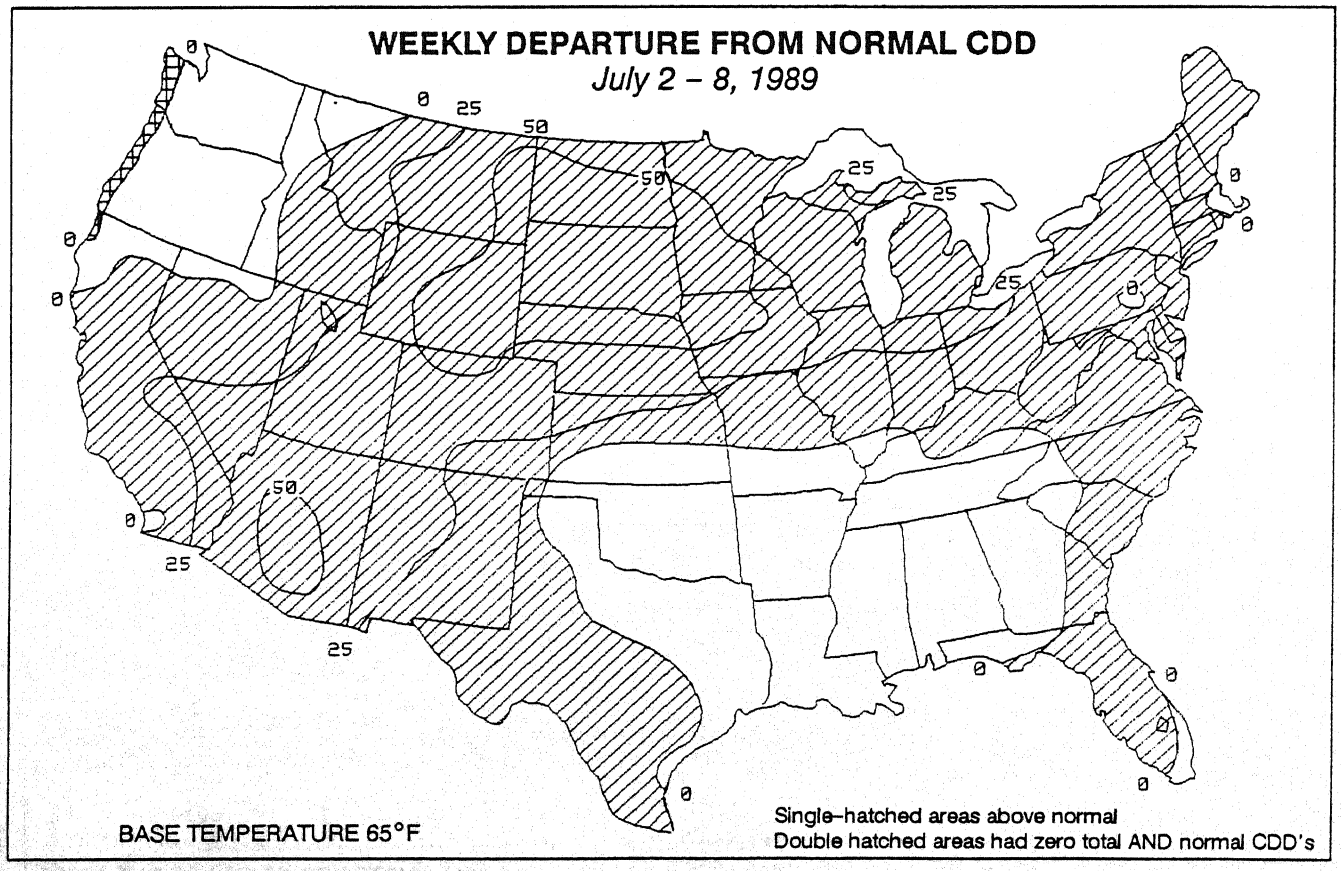


Triple digit readings baked much of the Southwest, Rockies, northern Plains, and Great Basin as some stations surpassed 110°F and Death Valley, CA soared to 127°F (top). Dangerous apparent temperatures (greater than 105°F) were found along the Gulf States, in the Southeast, the northern and central Plains, and the Southwest (bottom).



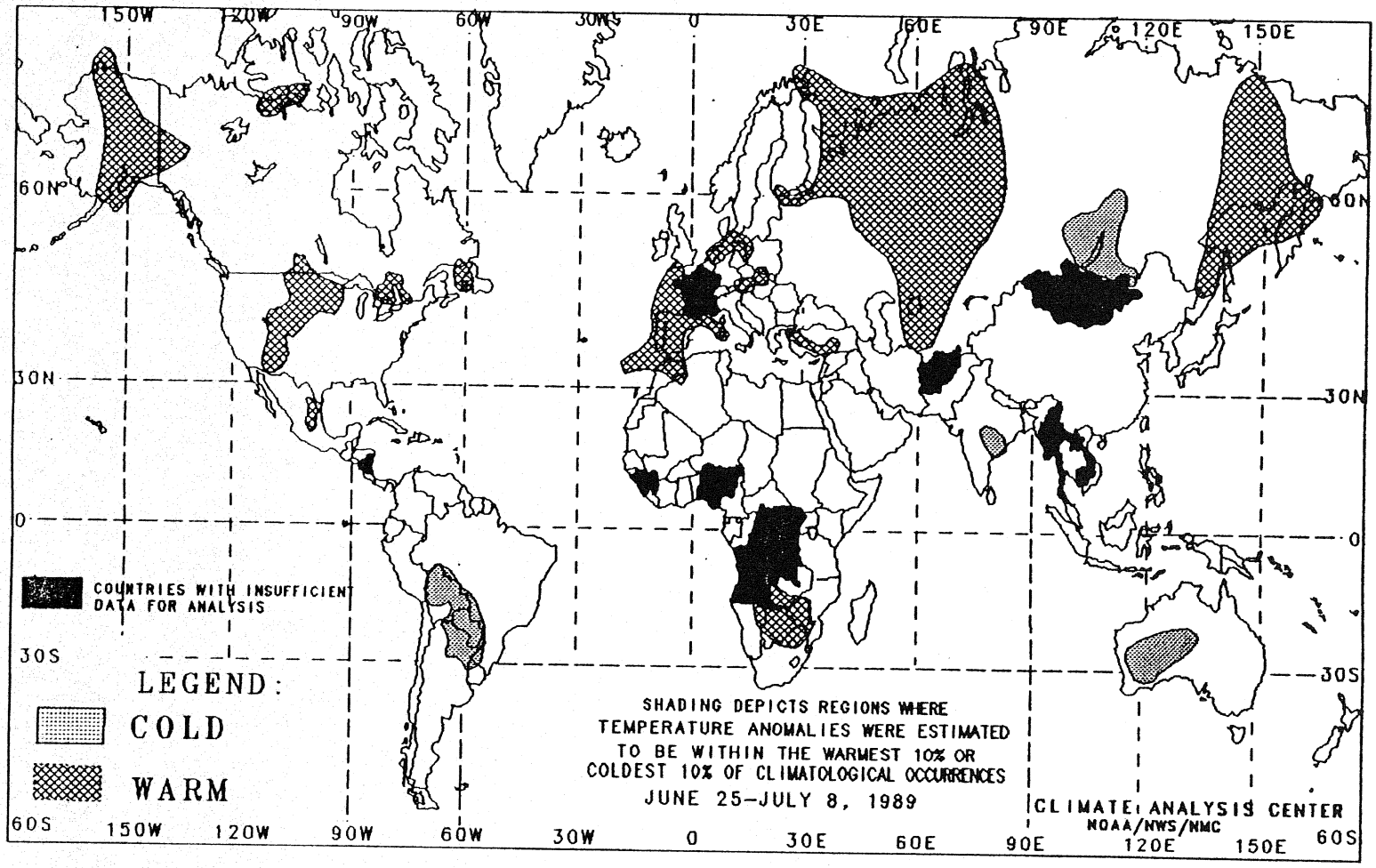


Warm air brought weekly total cooling degree–days values of 100 and above to the southern third of the country as well as the valleys of California and central and northern Plains (top). This unseasonably warm air created above normal cooling demand for most of the lower 48 with the exception of the Pacific Northwest and areas surrounding the lower Mississippi Valley (bottom).



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

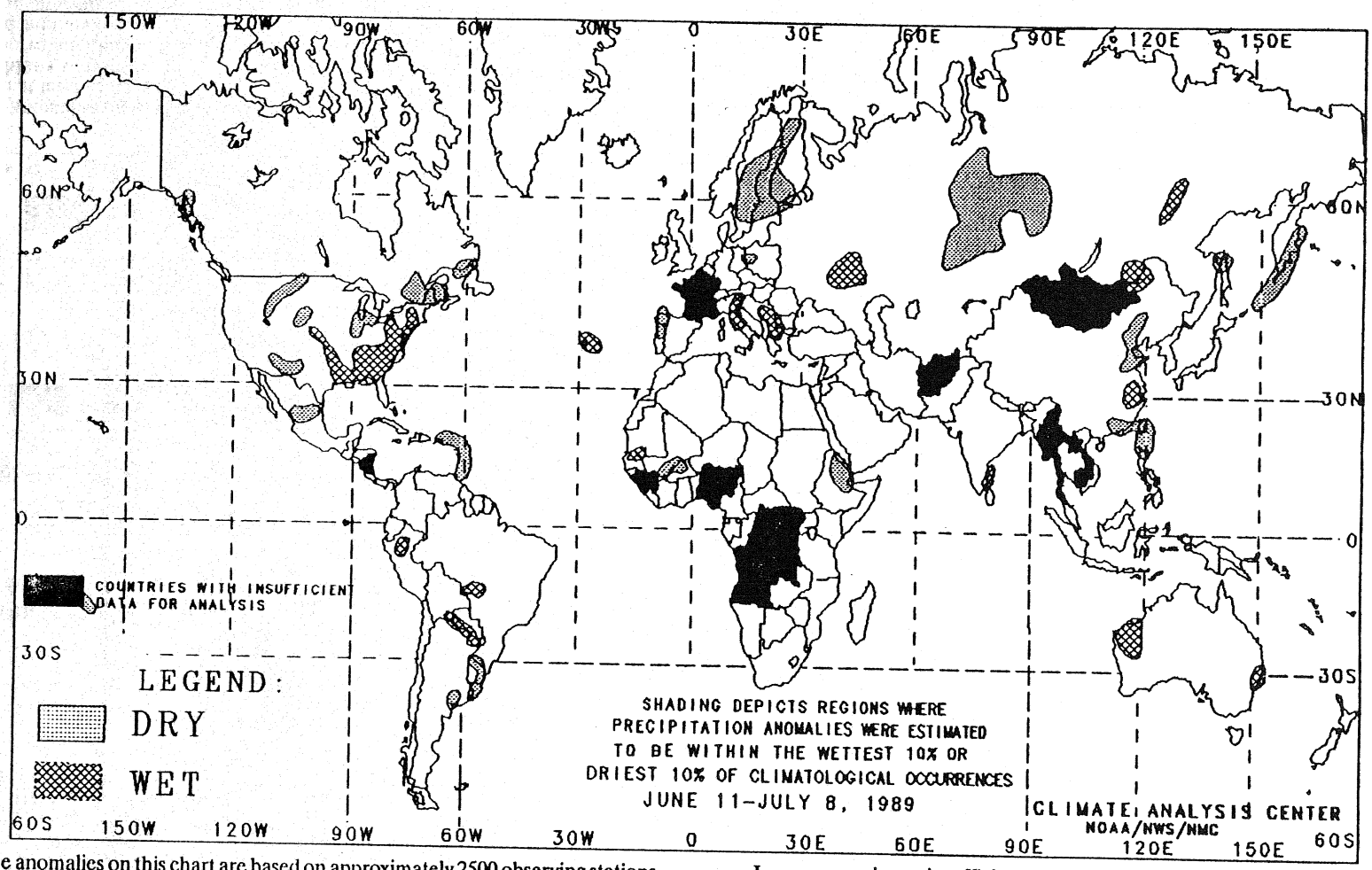
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

UNITED STATES MONTHLY CLIMATE SUMMARY

JUNE 1989

In a complete reversal of last June, the major climatic features of June 1989 included copious rains, flash flooding, countless severe weather outbreaks, and near to below normal temperatures across much of the central and southern Great Plains, the Southeast, and along the Atlantic Seaboard. Approximately a year ago, acute dryness plagued most of the eastern half of the nation and record warmth covered much of the north-central U.S. This year, the converse problem of excessive rainfall associated with several slow-moving cold fronts and from Tropical Storm Allison has saturated the ground and caused severe flooding in many parts of the South and East. For example, during the first half of 1989, Shreveport, LA surpassed their ANNUAL normal precipitation of 43.9 inches, while only 13.5 inches of rain fell during the same time period in 1988. Severe weather has been a trademark of not only this June but of the first half of 1989 as preliminary statistics have indicated a record number of tornadoes during June 1989 (274) and during January-June 1989 (765), surpassing the previous highs of 756 in 1982 and 747 in 1973 (see Figure 1). By comparison, the first half of 1988 had the least number of tornadoes on record. Early in the month, a couple of stationary fronts triggered numerous outbreaks of severe weather in the south-central Great Plains, central Great Lakes, and Gulf Coast where up to 17 inches of rain fell in a few days on parts of northwestern Florida. By mid-month, wet weather returned to the Northeast region after a brief respite from the second wettest May in 95 years. Strong thunderstorms were common throughout the south-central Great Plains, Southeast, and along the Gulf and Atlantic Coasts in response to another slow-moving cold front and an upper-air disturbance. A cold front generated beneficial rains in much of the abnormally dry northern Great Plains and western Corn Belt, especially in Nebraska and Iowa, but it was also accompanied by severe weather. Towards the end of June, Tropical Storm Allison, which originated in the Pacific Ocean as Hurricane Cosme, made landfall near the central Texas coast on June 26. It rapidly weakened, but its remnants drifted slowly and erratically northeastward, triggering torrential showers and thunderstorms and producing severe flooding along the western half of the Gulf Coast, in the Tennessee and lower Mississippi Valleys, and throughout the Southeast. More than 30 inches of rain were measured by stations in central Louisiana within a five day period. In contrast, subnormal June precipitation occurred in parts of the central and western Corn Belts and the northern Great Plains. A persistent ridge of high pressure kept most of the Southwest and Great Basin generally warm and dry.

With the first, second, and sixth wettest June since 1895 in the South, Southeast, and Northeast regions, respectively, June 1989 nationally ranked as the second wettest June during the past 95 years, according to the National Climatic Data Center (NCDC). It was only a year ago that the second driest June on record occurred in the contiguous United States. Approximately one fourth of the nation is now in the unusually or extremely moist Palmer categories, reversing a downward trend during the last two years in the percent moist curve (see front cover). Based upon the River Forecast Centers, hundreds of stations throughout the southern half of the Great Plains, the Southeast, and along the East Coast measured more than 6 inches of rain during June, while dozens of locations in Louisiana, southeastern Texas, northwestern Florida, eastern Tennessee, and in parts of Mississippi, Alabama, and Georgia accumulated between 15 and 30 inches (see Tables 1 and 5). Unfortunately, much of the monthly rain fell during a brief time period (e.g. a few hours and/or days) and on previously saturated grounds, causing severe flooding in many areas. Accordingly, many portions of the central, southern, and eastern U.S. recorded more than twice the normal June precipitation (see Figures 2 and 3).

In contrast, subnormal June rainfall was observed in the northern Great Plains, central Corn Belt, and throughout much of the western third of the country (see Table 2, Figures 2 and 3). Parts of the Dakotas, Iowa, Wisconsin, and Illinois, which usually receives most of their annual precipitation during the late spring and early summer months, only reported between 1 and 2 inches, or less than half the normal June total. In the wet East, the only sections with below normal monthly rainfall included eastern Florida and northern Maine. According to the NCDC, nearly a third of the country is still experiencing severe to extreme drought (see Figure 4). This is mainly confined to the western Corn Belt, the north-central Great Plains, and the West. Regionally, the Northwest and West-North Central reported the thirteenth and sixteenth driest June since 1895.

June temperatures averaged above normal in the Far West, in extreme southern Texas, and along the Atlantic Seaboard (see Table 3, Figures 5 and 6). The greatest positive departures (between +3°F and +6°F) were found in Arizona, Nevada, and adjacent parts of California. Unusually hot weather baked most of the West and Southwest during the middle of the month while near to below normal temperatures during early and late June diminished the magnitude of the monthly positive departures. Even though most of June's daily temperatures averaged above normal along the East Coast, monthly departures were only between +1°F and +2°F. Monthly temperatures in both Hawaii and Alaska were generally near to slightly above normal.

Unseasonably cool weather prevailed across most of the nation's midsection as June temperatures averaged between 2°F and 7°F below normal in the central Great Plains and lower Missouri Valley (see Table 4, Figures 5 and 6). Frequent occurrences of cloudiness and precipitation, in addition to a prolonged cool spell from a pair of intense Canadian high pressure centers during the second and third weeks of June, greatly contributed to the eighth coldest June since 1895 in the South (KS, OK, TX, LA, MS, AR) region, according to the NCDC. Elsewhere, June 1989 temperatures averaged near to slightly below normal east of the Rockies and west of the Appalachians.

TEMPERATURE AND PRECIPITATION RANKINGS FOR JUNE 1989, BASED ON THE PERIOD 1895 - 1989 (95 YEARS) WHERE 1 = DRIEST/COLDEST AND 95 = WETTEST/HOTTEST

REGION	*PRECIPITATION*	*TEMPERATURE*
NORTHEAST	90	65
EAST NORTH CENTRAL	36	29
CENTRAL	77	23
SOUTHEAST	94	54
WEST NORTH CENTRAL	16	44
SOUTH	95	8
SOUTHWEST	37	62
NORTHWEST	13	81
WEST	77	68
NATIONAL	94	44

National Climatic Data Center

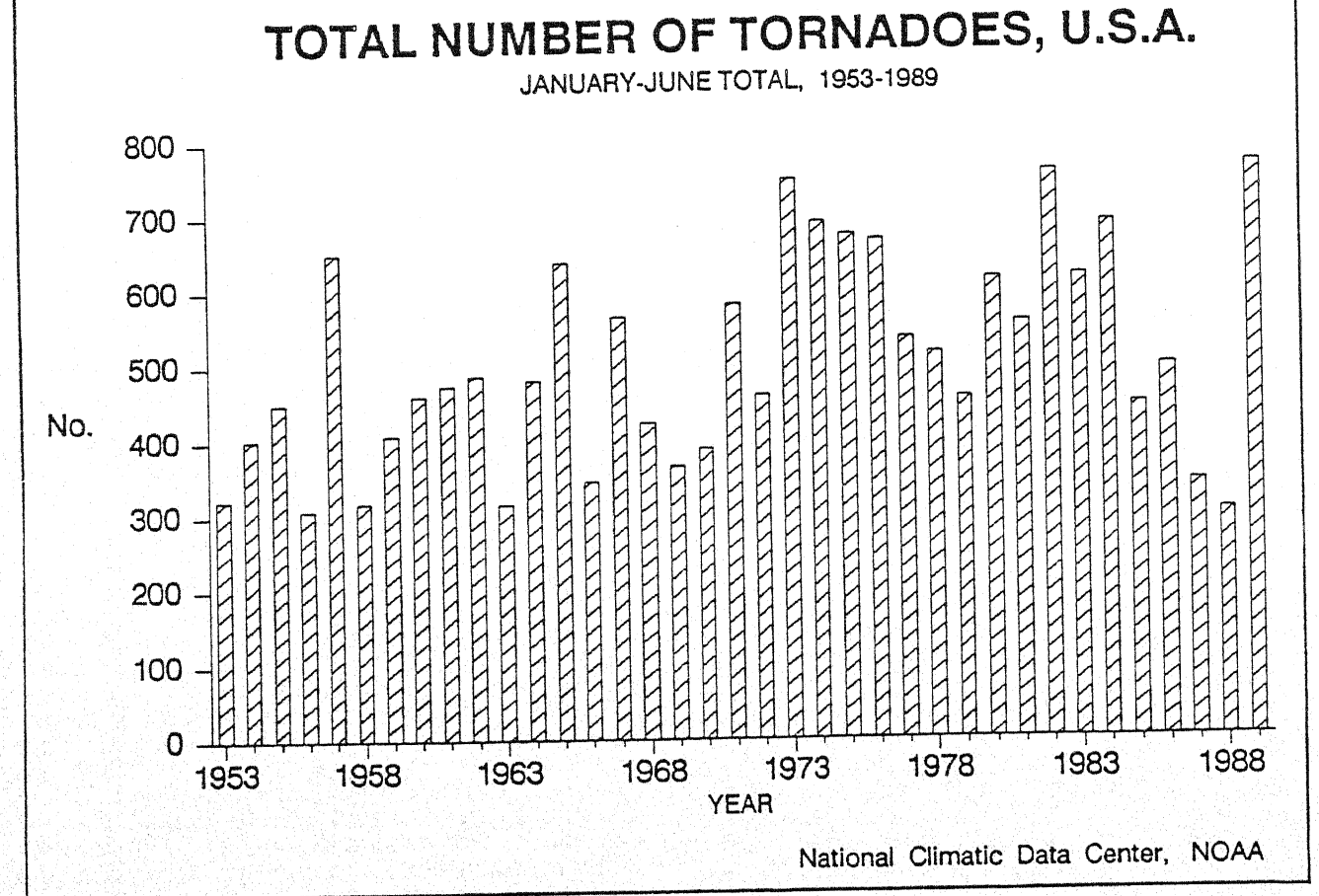


Figure 1. Total number of tornadoes during January – June since 1953 in the contiguous U.S. obtained from the National Climatic Data Center (NCDC). The first half of 1989 has been marked by unusually severe weather, and a record number of tornadoes have been reported. In contrast, the first half of 1988 had the fewest recorded tornadoes since records began in 1953.

TABLE 1. JUNE STATIONS WITH MORE THAN 150% OF NORMAL PRECIPITATION AND MORE THAN 10 INCHES OF PRECIPITATION; OR, STATIONS WITH MORE THAN 10 INCHES OF PRECIPITATION AND NO NORMALS.

STATION	TOTAL (INCHES)	PCT. OF NORMAL
MILTON/WHITING, FL	27.20	***
LAKE CHARLES, LA	25.32	617.6
BATON ROUGE, LA	23.18	745.3
PORT ARTHUR, TX	18.71	389.0
HOUSTON, TX	17.90	404.1
TALLAHASSEE, FL	17.41	266.6
PANAMA CITY/TYNDALL AFB, FL	17.13	***
SHREVEPORT/BARKSDALE AFB, LA	17.06	***
SHREVEPORT, LA	16.90	488.4
GREENWOOD, MS	16.59	495.2
LAFAYETTE, LA	16.20	387.6
HOUSTON/WILLIAM HOBBY, TX	15.22	***
PENSACOLA, FL	14.98	260.5
HUNTSVILLE, AL	14.89	398.1
OKLAHOMA CITY, OK	14.76	387.4
MONTGOMERY, AL	14.44	421.0
HOUSTON/ELLINGTON AFB, TX	14.31	***
OKLAHOMA CITY/TINKER AFB, OK	13.72	***
ALBANY, GA	12.58	288.5
GALVESTON, TX	12.41	349.6
MT. WASHINGTON, NH	12.41	176.3
FT WORTH/MEACHAM, TX	12.36	***
MEMPHIS NAS, TN	12.34	***
LUFKIN, TX	12.27	361.9
CORDOVA/MILE 13, AK	12.25	254.7
VALDOSTA, GA	12.02	***
DOVER AFB, DE	11.62	332.0
FORT WORTH/CARSWELL AFB, TX	11.37	***
TUSCALOOSA, AL	11.28	339.8
CAPE GIRARDEAU, MO	11.06	315.1
MUSCLE SHOALS, AL	11.04	313.6
MONROE, LA	10.95	331.8
YAKUTAT, AK	10.93	196.2
ASHEVILLE, NC	10.73	290.0
TUPELO, MS	10.60	***
VALPARAISO/EGLIN AFB, FL	10.57	191.5
ALEXANDRIA/ENGLAND AFB, LA	10.56	270.8
MONTGOMERY/MAXWELL AFB, AL	10.48	267.4
PITTSBURGH, PA	10.29	294.0
YOUNGSTOWN, OH	10.09	287.5
OZARK/CAIRNS AFB, AL	10.03	***

(Note: Stations without precipitation normals are indicated by asterisks.)

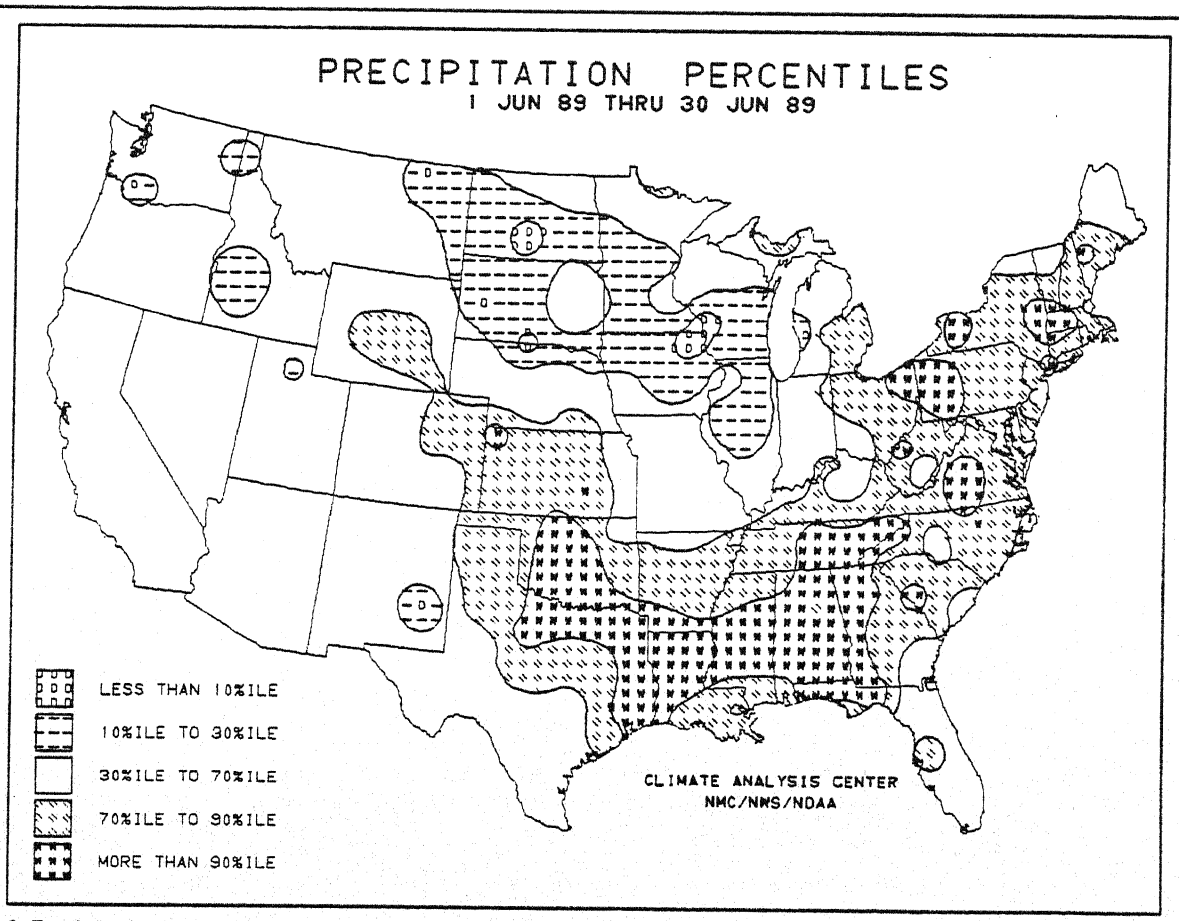


Figure 2. Precipitation percentiles for June 1989. Statistically and historically many areas of the South and East reported record or near-record June wetness.

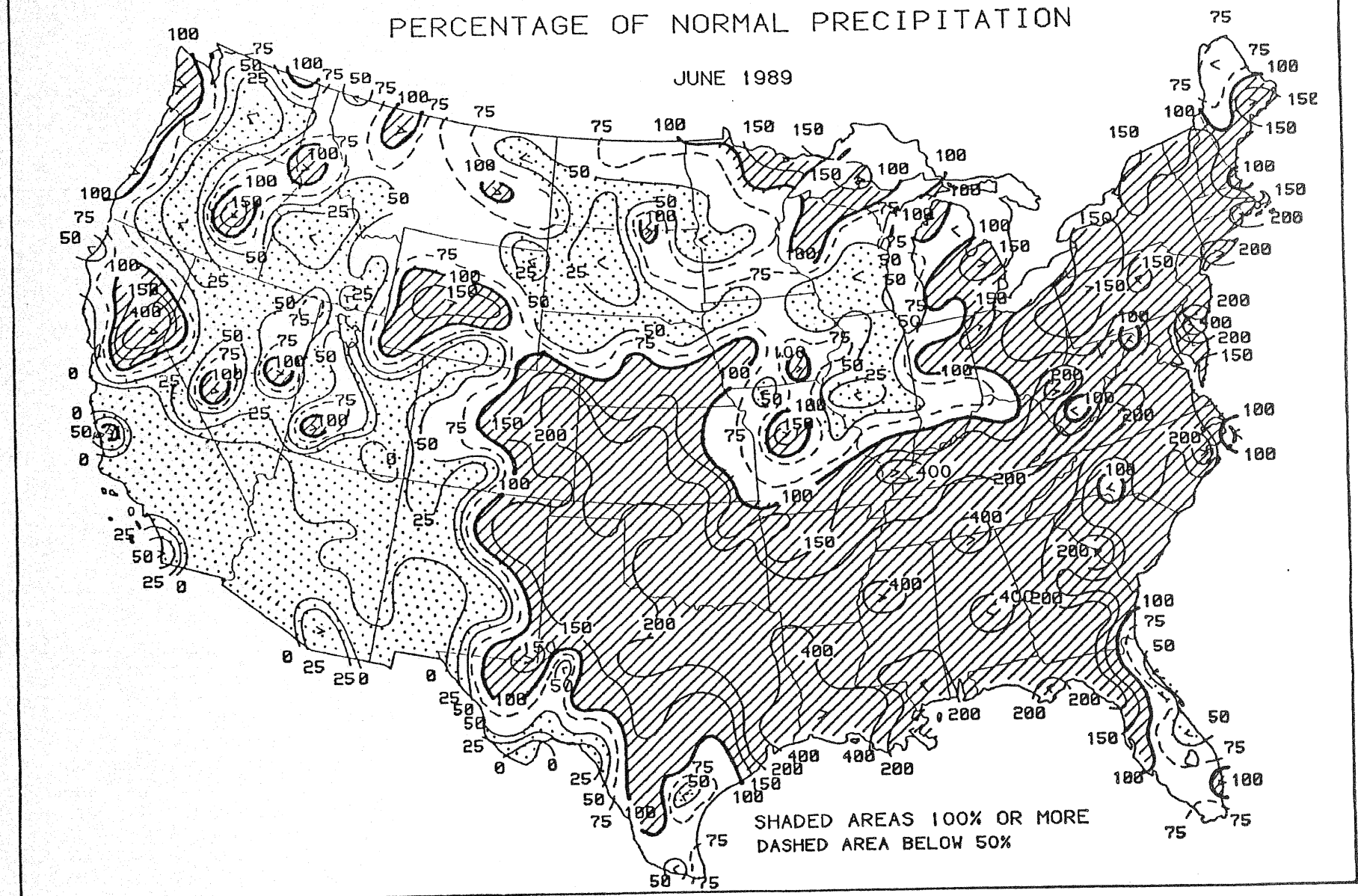


Figure 3. Percent of normal precipitation during June 1989. Lined areas are above normal, and dotted areas are less than 50%. Many parts of the central, southern, and eastern U.S. observed more than twice the normal June rainfall while sections of the central Corn Belt, northern Great Plains, and West experienced abnormally dry weather.

TABLE 2. JUNE STATIONS WITH LESS THAN 50% OF NORMAL PRECIPITATION AND MORE THAN THREE INCHES OF NORMAL PRECIPITATION.

STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)	STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)
KANSAS CITY/MUNI., MO	0.08	1.9	4.13	GREEN BAY, WI	1.57	49.8	3.15
PIERRE, SD	0.49	13.0	3.76	MADISON, WI	1.67	43.1	3.87
SPRINGFIELD, IL	0.89	25.3	3.52	KEY WEST, FL	1.80	35.5	5.07
QUINCY, IL	0.95	23.6	4.03	SITKA, AK	1.82	48.5	3.75
RAPID CITY, SD	1.04	32.1	3.24	DAYTONA BEACH, FL	1.83	28.6	6.41
PEORIA, IL	1.28	33.0	3.88	SIOUX CITY, IA	1.83	45.9	3.99
LA CROSSE, WI	1.32	32.0	4.12	DUBUQUE, IA	1.86	44.5	4.18
JAMESTOWN, ND	1.38	38.4	3.59	BRUNSWICK, GA	1.91	33.3	5.74
WATERLOO, IA	1.40	32.6	4.29	NORFOLK, NE	1.96	45.3	4.33
SPENCER, IA	1.44	36.7	3.92	CEDAR RAPIDS, IA	1.98	44.6	4.44
DICKINSON, ND	1.50	44.9	3.34	CHICAGO/O'HARE, IL	2.01	46.9	4.29
ALICE, TX	1.50	45.1	3.33	ST. CLOUD, MN	2.20	45.7	4.81
FARGO, ND	1.51	49.7	3.04	VERO BEACH, FL	2.79	42.8	6.52

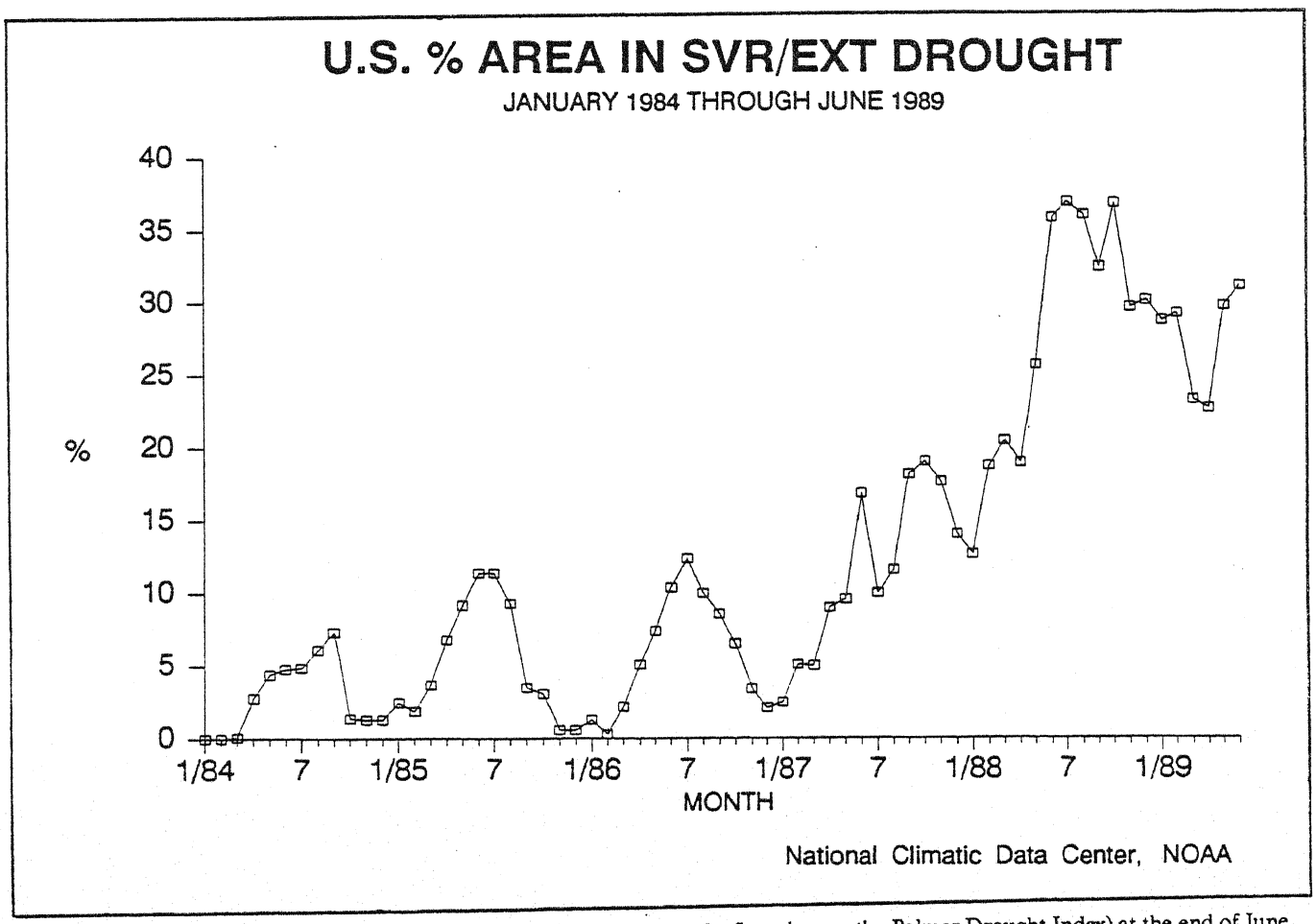


Figure 4. Percent of the contiguous U.S. in severe or extreme drought (based upon the Palmer Drought Index) at the end of June 1989. Nearly one-third of the nation was experiencing severe or extreme long-term dryness, especially throughout the West and in the northern Plains and western Corn Belt.

TABLE 3. JUNE AVERAGE TEMPERATURES 3.0°F OR MORE ABOVE NORMAL.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
PHOENIX, AZ	+5.6	92.1	HATTERAS, NC	+3.2	77.4
PRESCOTT, AZ	+4.9	71.6	BURLEY, ID	+3.2	65.8
GLENDALE/LUKE AFB, AZ	+4.3	88.8	SEATTLE/TACOMA, WA	+3.2	63.3
NORFOLK, VA	+4.1	78.4	CHARLOTTE, NC	+3.1	78.1
RENO, NV	+4.0	66.4	RALEIGH/DURHAM, NC	+3.1	77.0
SALISBURY, MD	+3.9	75.5	PHILADELPHIA, PA	+3.1	74.7
VICTORVILLE/GEORGE AFB, CA	+3.7	75.1	WASHINGTON/DULLES AIRPORT, VA	+3.1	73.6
BEEVILLE NAS, TX	+3.5	85.5	ATLANTIC CITY, NJ	+3.1	72.1
NEW BERN, NC	+3.5	79.3	REDMOND, OR	+3.0	61.7
BARROW, AK	+3.4	36.7	EUREKA, CA	+3.0	57.7
HAMPTON/LANGLEY AFB, VA	+3.3	77.4			

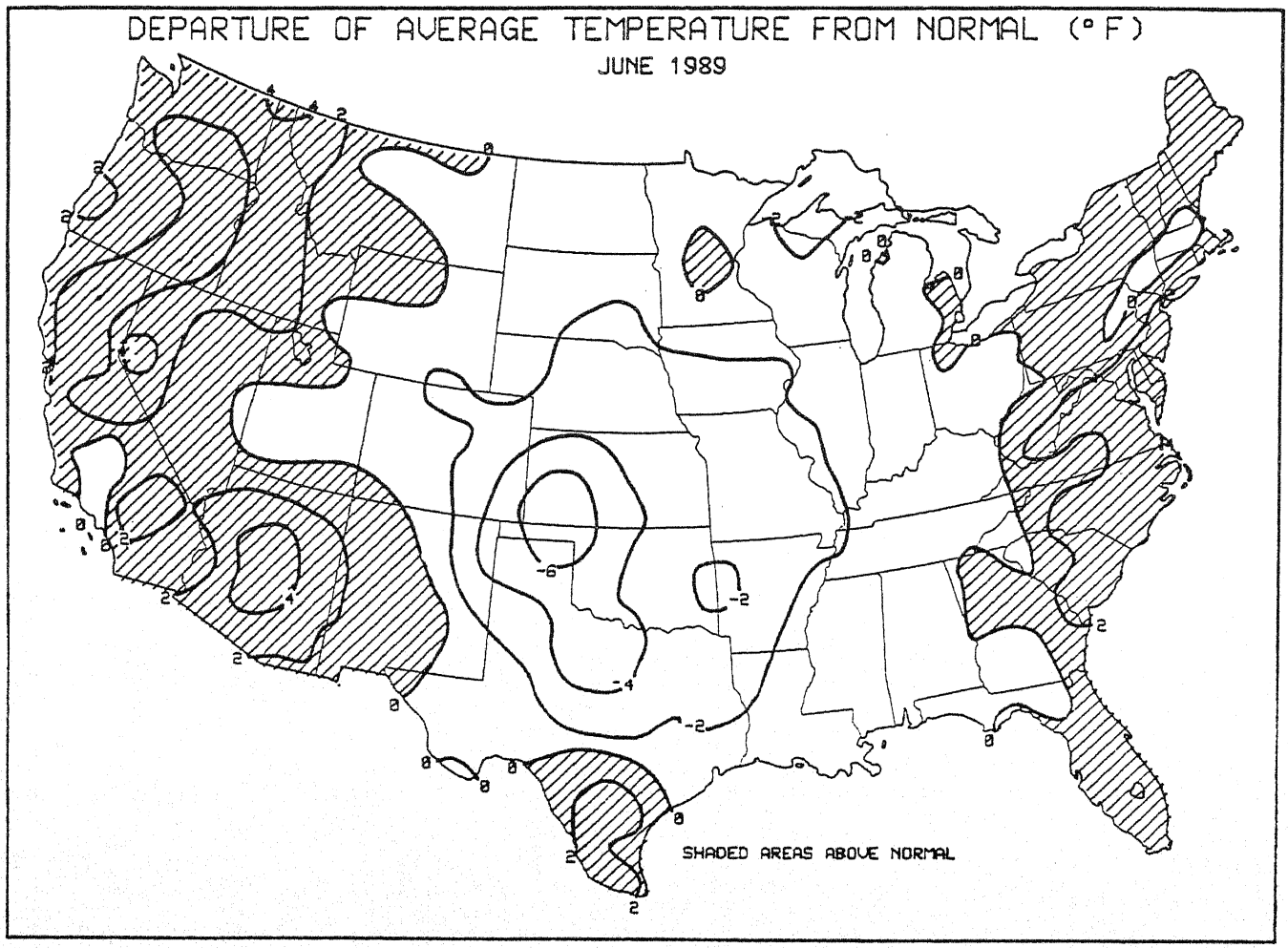


Figure 5. June 1989 temperature departure from normal (°F). Contours are drawn every 2°F, and shaded areas are above normal. While the Far West, southern Texas, and the Atlantic Seaboard observed above normal monthly temperatures, frequent cloud cover and precipitation kept conditions cool over the nation's midsection.

TABLE 4. JUNE AVERAGE TEMPERATURES 3.0°F OR MORE BELOW NORMAL.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
GARDEN CITY, KS	-7.6	66.9	KANSAS CITY/MUNI., MO	-3.6	72.4
DODGE CITY, KS	-6.7	68.0	CHANUTE, KS	-3.5	71.5
GAGE, OK	-6.5	70.1	COLORADO SPRINGS, CO	-3.4	62.1
AMARILLO, TX	-5.4	69.4	PUEBLO, CO	-3.4	67.8
HOBART, OK	-4.8	74.2	COLUMBIA, MO	-3.4	70.2
WICHITA FALLS, TX	-4.8	76.0	LITTLE ROCK, AR	-3.4	75.2
RUSSELL, KS	-4.6	69.9	DALLAS/FORT WORTH, TX	-3.4	77.9
ABILENE, TX	-4.5	75.9	CONCORDIA, KS	-3.2	70.5
TUCUMCARI, NM	-4.3	72.0	SHREVEPORT, LA	-3.2	76.7
ENID/VANCE AFB, OK	-4.3	73.4	SAN ANGELO, TX	-3.2	77.9
WICHITA, KS	-4.2	71.9	NORTH OMAHA, NE	-3.1	69.8
FT. SILL/HENRY POST, OK	-4.1	74.9	HARRISON, AR	-3.1	71.0
KANSAS CITY/INTL., MO	-4.0	71.1	LUBBOCK, TX	-3.1	74.5
GOODLAND, KS	-3.8	66.0	SALINA, KS	-3.0	72.2
SPRINGFIELD, MO	-3.8	69.6	LUFKIN, TX	-3.0	77.2
JOPLIN, MO	-3.6	71.6			

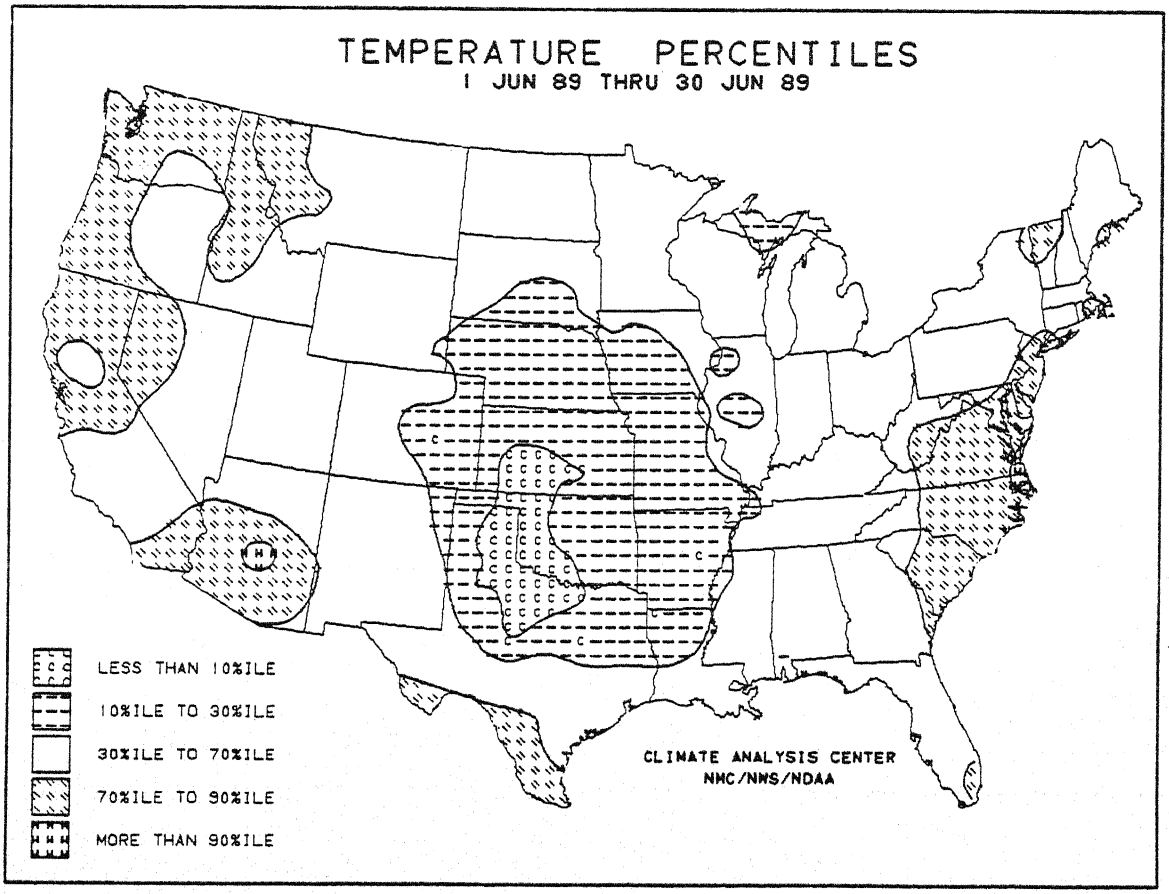


Figure 6. Temperature percentiles for June 1989. The only region with significant monthly temperature departures was the South (KS, OK, TX, LA, AR, MS) as it recorded the eighth coldest June since 1895, according to the NCDC.

TABLE 5. RECORD JUNE TOTAL PRECIPITATION.

STATION	TOTAL (INCHES)	NORMAL (INCHES)	PCT. OF NORMAL	RECORD TYPE	RECORDS BEGAN
LAKE CHARLES, LA	25.32	4.10	617.6	HIGHEST	1961
BATON ROUGE, LA	23.18	3.11	745.3	HIGHEST	1945
HOUSTON, TX	17.90	4.43	404.1	HIGHEST	1947
TALLAHASSEE, FL	17.41	6.53	266.6	HIGHEST	1947
SHREVEPORT, LA	16.90	3.46	488.4	HIGHEST	1947
OKLAHOMA CITY, OK	14.76	3.81	387.4	HIGHEST	1947
MONTGOMERY, AL	14.44	3.43	421.0	HIGHEST	1951
CORDOVA/MILE 13, AK	12.25	4.81	254.7	HIGHEST	1942
ASHEVILLE, NC	10.73	3.70	290.0	HIGHEST	1903
PITTSBURGH, PA	10.29	3.50	294.0	HIGHEST	1871
CHATTANOOGA, TN	9.38	3.33	281.7	HIGHEST	1951
ATLANTA, GA	9.34	3.39	275.5	HIGHEST	1947
MERIDIAN, MS	8.91	3.50	254.6	HIGHEST	1951
AUGUSTA, GA	8.84	3.86	229.0	HIGHEST	1947
DALLAS/FORT WORTH, TX	8.75	2.34	373.9	HIGHEST	1947
WICHITA FALLS, TX	8.48	2.83	299.6	HIGHEST	1951
AKRON, OH	8.42	3.25	259.1	HIGHEST	1944
KNOXVILLE, TN	8.21	3.93	208.9	HIGHEST	1947
JACKSON, MS	8.17	3.11	262.7	HIGHEST	1963
ROANOKE, VA	7.74	3.32	233.1	HIGHEST	1947
CHARLESTON, WV	7.54	3.30	228.5	HIGHEST	1951
RENO, NV	1.53	0.33	463.6	HIGHEST	1947
LACROSSE, WI	1.32	4.12	32.0	LOWEST	1951
ROSWELL, NM	0.02	0.98	2.0	LOWEST	1951
EL PASO, TX	0.00	0.54	0.0	LOWEST	1939
BARTER ISLAND, AK	0.00	0.51	0.0	LOWEST	1948

Note: Trace precipitation is considered no precipitation. Stations with no precipitation are only included if normal precipitation is 0.25 inches or more.

TABLE 6. RECORD JUNE EXTREME TEMPERATURES.

STATION	EXTREME (°F)	DATE	RECORD TYPE	RECORDS BEGAN
SCOTTSBLUFF, NE	105	19 JUN 89	HIGHEST	1943
BROWNSVILLE, TX	102	8 JUN 89	HIGHEST	1937
NORFOLK, NE	38	15 JUN 89	LOWEST	1946
ROCHESTER, MN	35	15 JUN 89	LOWEST	1961
POCATELLO, ID	30	21 JUN 89	LOWEST	1950